

STATUS OF CLAIMS

Claims 1 – 3 were pending before the present amendment. Claims 4 – 6 are newly added by this amendment.

Claims 1 – 2 stand rejected. Claim 3 stands objected to.

Claims 4 - 6 have been added. Disclosure support is found, for example, in claims 1, 2 and 3 as filed.

REMARKS

Claims 1 – 2 stand rejected under 35 U.S.C. 102(b) as being anticipated by any one of U.S. Patent No. 4,078,324 (Fishbein), U.S. Patent No. 4,241,347 (Albanese), U.S. Patent Publication No. US2002/0130810 (Gottwald) or U.S. Patent Publication No. US 2003/0117313 (Isaji).

The rejection is respectfully traversed, on the grounds that none of the references teaches all of the limitations of either claim 1 or claim 2. Moreover, there is no suggestion in the prior art to modify the references in any manner to arrive at the claimed invention.

The invention of claim 1 is a method of transmitting a radar signal in which phase perturbations are used to provide at least one selected frequency range of a relative null in the tail of the transmitted signal. The method employs phase perturbations to provide a constant-amplitude pulse with a reduced amplitude in a selected frequency range. For example, Fig. 2a shows the output of the unperturbed signal, and Fig. 2b shows the output of the perturbed signal.

None of the cited references teaches applying phase perturbations to a constant-amplitude pulse so as to produce a phase-perturbed constant-amplitude pulse centered at said frequency within said nominal frequency bandwidth of said radar with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band. While phase perturbations are taught in the prior art, none of the cited art teaches applying phase perturbations *so as to produce a pulse with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band*. Indeed, the prior art does not teach phase perturbation so as to produce a signal having a null at a selected frequency range, and transmitting the signal.

As to Fishbein, there is no disclosure of reducing the amplitude of a selected frequency range in a transmitted radar signal. Fishbein is concerned with phase perturbations to enhance signal processing after receipt of the reflected signal, as briefly explained at col. 1, line 58, to col. 2, line 3.

Fishbein also teaches a continuous wave (CW) correlation radar system (Title and Abstract). Claim 1 recites transmitting a pulse. As Fishbein does not teach a pulsed radar system, but a CW system, Fishbein does not teach this limitation of claim 1.

The Examiner has stated, on page 2 of the Office Action, that Fishbein teaches the limitation of “so as to produce a pulse with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band” in one of the Abstract, col. 1, lines 16 – 45, col. 2, lines 38 – 48. However, careful review of these portions of Fishbein shows no such disclosure.

As to Albanese, the Examiner states that Albanese teaches, inter alia, varying or perturbing the phase of the signal to null the unwanted signals. Applicant respectfully disagrees. The term “null” does not appear in Albanese. Nor does Albanese appear to have any disclosure of reducing the amplitude of a transmitted signal in a selected frequency range. Furthermore, Albanese teaches a continuous wave radar system (Title and Abstract), and thus does not teach the claimed step of transmitting a pulse.

As to Gottwald, the Examiner identifies Paragraph [0019] as teaching a method of interference suppression in a radar device by changing the carrier signal by phase modulation, and states that this reads on applying phase perturbation to the pulse. Gottwald merely teaches varying the carrier frequency by phase modulation. Gottwald has no teaching or suggestion of applying phase perturbations *so as to produce a pulse with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band*. Gottwald teaches, for example, transmitting pulsed signals by antenna 34 (Paragraph [0033]), with no reference to producing nulls in the transmitted signal.

Isaji merely teaches changing the phase of the signal, and does not teach nulling or reducing the amplitude of a portion of a transmitted signal within the signal's nominal bandwidth. The Examiner refers to the Abstract, Fig. 1, and Paragraph [0048]. The Abstract indicates that a frequency modulation signal is transmitted, but does not teach or suggest the above-identified limitations of present claim 1.

As to claim 2, none of the references teaches "selectively applying phase perturbations to said one of said long-range and short-range radar subpulses to tend to null that portion of said passband of said one of said long-range and short-range radar subpulses."

As to Fishbein, there is no disclosure of any of: (1) tending to null a portion of a passband; (2) radar pulses, or (3) long-range and short-range radar subpulses.

As to Albanese, there is also no disclosure of any of (1) tending to null a portion of a passband; (2) radar pulses, or (3) long-range and short-range radar subpulses.

As to Gottwald, there is no disclosure of either of: (1) tending to null a portion of a passband; or (2) long-range and short-range radar subpulses.

As to Isaji, there is no disclosure of either of: (1) tending to null a portion of a passband; or (2) long-range and short-range radar subpulses.

It is respectfully submitted that claims 1 and 2 are allowable over the prior art of record for at least the foregoing reasons.

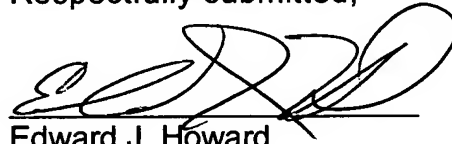
Newly added Claim 4 is also allowable over the prior art of record. New claims 5 and 6 depend from claim 4, and are likewise allowable.

CONCLUSION

Wherefore, Applicant believes he has addressed all outstanding grounds raised by the Examiner and respectfully submits the present case is in condition for allowance, early notification of which is earnestly solicited.

Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicant's undersigned attorney at his number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Edward J. Howard', written over a horizontal line.

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Attachment: 5 Replacement Sheets of Drawings

Amendments to the Drawings.

Applicant submits herewith 5 sheets of formal drawings, to replace all of the figures in the present application, namely, Figs. 1A, 1B, 1C, 2A, 2B, 2C and 3. As the replacement sheets are formal drawings, and do not make any changes to the drawings, no annotated sheets have been submitted.

Attachments: 5 Replacement Sheets